

CLAIM AMENDMENTS:

1. (currently amended) A control method of an external control system fan clutch wherein ~~the interior of a sealing housing constructed by a case of a non-magnetic material supported through a bearing on~~ comprising:

_____ providing a rotating shaft body fixedly attaching, a drive disk fixed to its tip the rotating shaft body and a cover attached to this case is partitioned by housing supported through a bearing on the rotating shaft, the housing having an interior, a partition plate in the housing and partitioning the interior into an oil reservoir chamber and a torque transmission chamber for internally mounting, said drive disk by a partition plate; being in the torque transmission chamber, a torque transmission gap being defined between the drive disk and the housing at locations spaced outward from the rotating shaft, a dam is arranged in one portion of the an inner circumferential wall face of the sealing housing opposed to the an outer circumferential wall portion of the drive disk for collecting and reservoiring oil at the a rotating time, an oil circulating flow passage through the partition plate inwardly of the torque transmission gap and a valve member comprising a spring material and having a magnetic property and being arranged within the oil reservoir chamber, the valve member having a fixed end at a radially inner position, a free end at a radially outer position, the free end being aligned for closing an the oil circulating flow passage formed in the partition plate between the torque transmission chamber and the oil reservoir chamber; an armature between the fixed and the free end, an electromagnet is supported by said rotating shaft body through the bearing on the oil reservoir chamber side of said sealing housing, and an

~~mechanism~~ electromagnet aligned with the armature for controlling the opening and closing of the oil circulating flow passage, ~~the method comprising:~~

utilizing a spring characteristic of the spring material of the valve member for biasing the valve member against the partition plate for keeping the oil circulating flow passage in a normally closed condition while keeping the valve member substantially free of magnetic forces acting thereon;

detecting a plurality of signals including: temperature of cooling liquid of a radiator, a fan rotating speed, temperature of transmission oil, vehicle speed, engine rotating speed, pressure of a compressor of an air conditioner and a turning-on or a turning-off signal of the air conditioner for determining a desired rotational speed of the sealing housing;

selectively operating the electromagnet in response to detected signals indicating a need for an increased rotational speed of the ~~sealing~~ housing for attracting the armature of the valve member and deflecting the valve member away from the partition plate for opening the oil circulating flow passage to permit a flow of oil through the oil circulating flow passage and radially outwardly into a ~~the~~ torque transmission clearance between the drive disk and the ~~sealing~~ housing to increase an effective contact area of the oil in the torque transmission clearance; and

selectively turning off the electromagnet in response to detected signals indicative of a requirement for a slower rotational speed of the ~~sealing~~ housing so that the valve member is substantially free of magnetic forces and is biased into the normally closed condition by the spring material for controlling rotating torque transmission from

a drive side to a driven side by increasing and decreasing an effective contact area of the oil in the torque transmission clearance.

2. (currently amended) The control method of the external control type fan clutch according to claim 1, wherein a magnetic material of a ring shape is arranged between said electromagnet and the valve member, and is constructed by assembling the magnetic material into the ~~sealing~~-housing so as to transmit a magnetic flux of the electromagnet to the valve member through the magnetic material.

3. (currently amended) A control method of an external control system fan clutch ~~wherein the interior of a sealing housing constructed by a case of a non-magnetic material supported through a bearing comprising:~~

providing on a rotating shaft-body fixedly attaching, a drive disk fixed to its tip the rotating shaft body and a cover attached to this case is partitioned by housing supported through a bearing on the rotating shaft, the housing having an interior, a partition plate in the housing and partitioning the interior into an oil reservoir chamber and a torque transmission chamber for internally mounting, said drive disk by a partition plate; being in the torque transmission chamber, a torque transmission gap being defined between the drive disk and the housing at locations spaced outward from the rotating shaft, a dam is arranged in one portion of the an inner circumferential wall face of the sealing housing opposed to the an outer circumferential wall portion of the drive disk for collecting and reservoiring oil at the a rotating time, an oil circulating flow passage through the partition plate inwardly of the torque transmission gap and a valve member comprising a spring material and having a magnetic property and being arranged within the oil reservoir chamber, the valve member having a fixed end at a

radially inner position, a free end at a radially outer position, the free end being aligned
for closing ~~an~~the oil circulating flow passage formed in the partition plate between the
torque transmission chamber and the oil reservoir chamber; an armature between the
fixed and the free end, an electromagnet is supported by said rotating shaft body
through the bearing on the oil reservoir chamber side of said sealing housing, and an
~~mechanism~~electromagnet aligned with the armature for controlling the opening and
closing of the oil circulating flow passage, ~~the method comprising:~~

utilizing a spring characteristic of the spring material of the valve member
for biasing the valve member against the partition plate for keeping the oil circulating
flow passage in a normally closed condition while keeping the valve member
substantially free of magnetic forces acting thereon;

selectively operating the electromagnet in response to detected signals
indicating a need for an increased rotational speed of the ~~sealing~~-housing for attracting
the valve member and deflecting the valve member away from the partition plate for
opening the oil circulating flow passage to permit a flow of oil into the torque
transmission clearance between the drive disk and the sealing housing to increase an
effective contact area of the oil in the torque transmission clearance; and

selectively turning off the electromagnet in response to detected signals
indicative of the requirement for a slower rotational speed of the ~~sealing~~-housing so that
the valve member is substantially free of magnetic forces and is biased into the normally
closed condition by the spring material for controlling rotating torque transmission from
a drive side to a driven side by increasing and decreasing an effective contact area of
the oil in the torque transmission clearance; wherein the operation of the electromagnet

for opening the oil circulating flow passage and a turning-off of the electromagnet so that the spring material biases the valve member against the partition plate for closing the oil circulating flow passage are controlled so that an upper limit rotating speed is set to an optimum fan rotating speed required from the engine side; a fan rotating speed control signal is temporarily stopped on the basis of the differential speeds between an engine rotating speed, the fan rotating speed and said optimum fan rotating speed; the fan rotating speed control signal is temporarily stopped on the basis of an engine rotating acceleration or an accelerator (throttle) position acceleration; or a limit is given to a changing rate of the optimum fan rotating speed on the basis of the changing rate of said optimum fan rotating speed.

4. (currently amended) The control method of the external control type fan clutch according to claim 3, wherein a magnetic material of a ring shape is arranged between said electromagnet and the valve member, and is constructed by assembling the magnetic material into the sealing-housing so as to transmit a magnetic flux of the electromagnet to the valve member through the magnetic material.

5. (previously presented) The control method of the external control type fan clutch according to claim 3, wherein the step of selectively operating the electromagnet in response to signal indicating a need for an increase rotational speed of the sealing housing comprises detecting a plurality of signal including: temperature of cooling liquid of a radiator, a fan rotating speed, temperature of transmission oil, vehicle speed, engine rotating speed, pressure of a compressor of an air conditioner and a turning-on or a turning-off signal of the air conditioner for determining a desired rotational speed of the sealing housing.